

1. (PREVIOUSLY PRESENTED) A ground-based system for tracking and warning aircraft, comprising:

a ground-based system for tracking at least one aircraft to determine aircraft position and altitude;  
a ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned; and  
means for warning the at least one aircraft.

2. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the ground-based system for tracking comprises a 3-D multilateration system for determining aircraft position and altitude.

3. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the ground-based system for tracking comprises a 2-D multilateration system for determining aircraft position and a means for receiving transponder data to determine aircraft altitude.

4. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the ground-based system for tracking comprises an active radar system.

5. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the ground-based system for tracking comprises a passive radar system.

6. (PREVIOUSLY PRESENTED) The system of claim 2, wherein the 3-D multilateration system determines aircraft position, altitude, track and speed.

7. (PREVIOUSLY PRESENTED) The system of claim 3, wherein the 2-D multilateration system

determines aircraft position, track, and speed.

8. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the at least one aircraft position and altitude to a minimum safe altitude profile and determining that the at least one aircraft should be warned if the altitude of the at least one aircraft is approaching or below that of a minimum safe altitude for the position of the at least one aircraft.

9. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the position and altitude of a first of the at least one aircraft with the position and altitude of a second of at least one aircraft and determining that the at least one aircraft should be warned if the position and altitude of the first of the at least one aircraft and the position and altitude of the second of the at least one aircraft are within a predetermined range of one another.

10. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the at least one aircraft position and altitude to an airport noise profile and determining that the at least one aircraft should be warned if the position and altitude of the at least one aircraft is approaching or exceeding a boundary of the airport noise profile.

11. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the means for warning the at

least one aircraft comprises a means for generating an audio radio message to the at least one aircraft so that a pilot of the at least one aircraft is audibly warned.

12. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the means for warning the at least one aircraft comprises a means for generating a visual message to the at least one aircraft so that a pilot of the at least one aircraft is visually warned.

13. (PREVIOUSLY PRESENTED) The system of claim 12, wherein the means for warning the at least one aircraft comprises a digital data link to the aircraft, wherein digital warning data are broadcast to the aircraft from the ground, and the digital warning data is displayed on an aircraft cockpit display.

14. (PREVIOUSLY PRESENTED) The system of claim 2, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the at least one aircraft position and altitude to a minimum safe altitude profile and determining that the at least one aircraft should be warned if the altitude of the at least one aircraft is approaching or below that of a minimum safe altitude for the position of the at least one aircraft.

15. (PREVIOUSLY PRESENTED) The system of claim 2, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the position and altitude of a first of the at least one aircraft with the position and altitude of a second of at least one aircraft and determining that the at least one aircraft should be warned if the position and altitude of the first of the at least one aircraft and the position and altitude of the second of the at least one aircraft are within a predetermined range of one

another.

16. (PREVIOUSLY PRESENTED) The system of claim 2, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the at least one aircraft position and altitude to an airport noise profile and determining that the at least one aircraft should be warned if the position and altitude of the at least one aircraft is approaching or exceeding a boundary of the airport noise profile.

17. (PREVIOUSLY PRESENTED) The system of claim 2, wherein the means for warning the at least one aircraft comprises a means for generating an audio radio message to the at least one aircraft so that a pilot of the at least one aircraft is audibly warned.

18. (PREVIOUSLY PRESENTED) The system of claim 2, wherein the means for warning the at least one aircraft comprises a means for generating a visual message to the at least one aircraft so that a pilot of the at least one aircraft is visually warned.

19. (PREVIOUSLY PRESENTED) The system of claim 18, wherein the means for warning the at least one aircraft comprises a digital data link to the aircraft, wherein digital warning data are broadcast to the aircraft from the ground, and the digital warning data is displayed on an aircraft cockpit display.

20. (PREVIOUSLY PRESENTED) The system of claim 3, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the at least one aircraft position and altitude to a minimum safe altitude profile and determining that the at least one aircraft should be warned if the

altitude of the at least one aircraft is approaching or below that of a minimum safe altitude for the position of the at least one aircraft.

21. (PREVIOUSLY PRESENTED) The system of claim 3, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the position and altitude of a first of the at least one aircraft with the position and altitude of a second of at least one aircraft and determining that the at least one aircraft should be warned if the position and altitude of the first of the at least one aircraft and the position and altitude of the second of the at least one aircraft are within a predetermined range of one another.

22. (PREVIOUSLY PRESENTED) The system of claim 3, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the at least one aircraft position and altitude to an airport noise profile and determining that the at least one aircraft should be warned if the position and altitude of the at least one aircraft is approaching or exceeding a boundary of the airport noise profile.

23. (PREVIOUSLY PRESENTED) The system of claim 3, wherein the means for warning the at least one aircraft comprises a means for generating an audio radio message to the at least one aircraft so that a pilot of the at least one aircraft is audibly warned.

24. (PREVIOUSLY PRESENTED) The system of claim 3, wherein the means for warning the at least one aircraft comprises a means for generating a visual message to the at least one aircraft so that a pilot of the at least one aircraft is visually warned.

25. (CURRENTLY AMENDED) The system of claim 25 1, wherein the means for warning the at least one aircraft comprises a digital data link to the aircraft, wherein digital warning data are broadcast to the aircraft from the ground, and the digital warning data is displayed on an aircraft cockpit display.

26. (PREVIOUSLY PRESENTED) The system of claim 6, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the at least one aircraft position, altitude and track to a minimum safe altitude profile and determining that the at least one aircraft should be warned if the position, altitude, and track of the at least one aircraft indicates that the at least one aircraft is approaching or below that of a minimum safe altitude for the position of the at least one aircraft.

27. (PREVIOUSLY PRESENTED) The system of claim 6, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the position, altitude, and track of a first of the at least one aircraft with the position, and altitude, and track of a second of at least one aircraft and determining that the at least one aircraft should be warned if the position, altitude, and track of the first of the at least one aircraft and the position, altitude, and track of the second of the at least one aircraft are within a predetermined range of one another or on course to come within a predetermined range of one another.

28. (PREVIOUSLY PRESENTED) The system of claim 6, wherein the ground-based system for comparing aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises means for comparing the at least one aircraft position, altitude,

and track to an airport noise profile and determining that the at least one aircraft should be warned if the position, altitude, and track indicate that the at least one aircraft is approaching or exceeding a boundary of the airport noise profile.

29. (PREVIOUSLY PRESENTED D) The system of claim 6, wherein the means for warning the at least one aircraft comprises a means for generating an audio radio message to the at least one aircraft so that a pilot of the at least one aircraft is audibly warned.

30. (PREVIOUSLY PRESENTED) The system of claim 6, wherein the means for warning the at least one aircraft comprises a means for generating a visual message to the at least one aircraft so that a pilot of the at least one aircraft is visually warned.

31. (PREVIOUSLY PRESENTED) The system of claim 30, wherein the means for warning the at least one aircraft comprises a digital data link to the aircraft, wherein digital warning data are broadcast to the aircraft from the ground, and the digital warning data is displayed on an aircraft cockpit display.

32. (PREVIOUSLY PRESENTED) A ground-based method for tracking and warning aircraft, comprising the steps of:

tracking in a ground-based system, at least one aircraft to determine aircraft position and altitude,  
comparing in a ground-based system, aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned, and  
warning the at least one aircraft.

33. (PREVIOUSLY PRESENTED) The method of claim 32, wherein said step of tracking in a

ground-based system comprises 3-D multilateration to determine aircraft position and altitude.

34. (PREVIOUSLY PRESENTED) The method of claim 32, wherein said step of tracking in a ground-based system comprises 2-D multilateration to determine aircraft position and a receiving transponder data to determine aircraft altitude.

35. (PREVIOUSLY PRESENTED) The method of claim 32, wherein said step of tracking in a ground-based system comprises the step of tracking using active radar.

36. (PREVIOUSLY PRESENTED) The method of claim 32, wherein said step of tracking in a ground-based system comprises the step of tracking using passive radar.

37. (PREVIOUSLY PRESENTED) The method of claim 33, wherein the step of 3-D multilateration determines aircraft position, altitude, track and speed.

38. (PREVIOUSLY PRESENTED) The method of claim 34, wherein the step of 2-D multilateration determines aircraft position, track, and speed.

39. (PREVIOUSLY PRESENTED) The method of claim 32, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises the steps of:

comparing the at least one aircraft position and altitude to a minimum safe altitude profile, and  
determining that the at least one aircraft should be warned if the altitude of the at least one aircraft is approaching or below that of a minimum safe altitude for the position of the at least one aircraft.



40. (PREVIOUSLY PRESENTED) The method of claim 32, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises the steps of:

comparing the position and altitude of a first of the at least one aircraft with the position and altitude of a second of at least one aircraft, and

determining that the at least one aircraft should be warned if the position and altitude of the first of the at least one aircraft and the position and altitude of the second of the at least one aircraft are within a predetermined range of one another.

41. (PREVIOUSLY PRESENTED) The method of claim 32, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises the steps of:

comparing the at least one aircraft position and altitude to an airport noise profile, and

determining that the at least one aircraft should be warned if the position and altitude of the at least one aircraft is approaching or exceeding a boundary of the airport noise profile.

42. (PREVIOUSLY PRESENTED) The method of claim 32, wherein said step of warning the at least one aircraft comprises the step of generating an audio radio message to the at least one aircraft so that a pilot of the at least one aircraft is audibly warned.

43. (PREVIOUSLY PRESENTED) The method of claim 32, wherein said step of warning the at least one aircraft comprises the step of generating a visual message to the at least one aircraft so that a pilot of the at least one aircraft is visually warned.

44. (PREVIOUSLY PRESENTED) The method of claim 43, wherein said step of warning the at least one aircraft comprises the steps of:

transmitting, over a digital data link, digital warning data to the aircraft from the ground, and displaying the digital warning data on an aircraft cockpit display.

45. (PREVIOUSLY PRESENTED) The method of claim 33, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises the steps of:

comparing the at least one aircraft position and altitude to a minimum safe altitude profile, and determining that the at least one aircraft should be warned if the altitude of the at least one aircraft is approaching or below that of a minimum safe altitude for the position of the at least one aircraft.

46. (PREVIOUSLY PRESENTED) The method of claim 33, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises the steps of:

comparing the position and altitude of a first of the at least one aircraft with the position and altitude of a second of at least one aircraft, and

determining that the at least one aircraft should be warned if the position and altitude of the first of the at least one aircraft and the position and altitude of the second of the at least one aircraft are within a predetermined range of one another.

47. (PREVIOUSLY PRESENTED) The method of claim 33, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine

whether the at least aircraft should be warned comprises the steps of:

comparing the at least one aircraft position and altitude to an airport noise profile, and

determining that the at least one aircraft should be warned if the position and altitude of the at least one aircraft is approaching or exceeding a boundary of the airport noise profile.

48. (PREVIOUSLY PRESENTED) The method of claim 33, wherein said step of warning the at least one aircraft comprises the step of generating an audio radio message to the at least one aircraft so that a pilot of the at least one aircraft is audibly warned.

49. (PREVIOUSLY PRESENTED) The method of claim 33, wherein said step of warning the at least one aircraft comprises the step of generating a visual message to the at least one aircraft so that a pilot of the at least one aircraft is visually warned.

50. (PREVIOUSLY PRESENTED) The method of claim 49, wherein said step of warning the at least one aircraft comprises the steps of:

transmitting, over a digital data link, digital warning data to the aircraft from the ground, and

displaying the digital warning data on an aircraft cockpit display.

51. (PREVIOUSLY PRESENTED) The method of claim 34, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises the steps of:

comparing the at least one aircraft position and altitude to a minimum safe altitude profile, and

determining that the at least one aircraft should be warned if the altitude of the at least one aircraft is approaching or below that of a minimum safe altitude for the position of the at least one aircraft.

52. (PREVIOUSLY PRESENTED) The method of claim 34, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises the steps of:

comparing the position and altitude of a first of the at least one aircraft with the position and altitude of a second of at least one aircraft, and

determining that the at least one aircraft should be warned if the position and altitude of the first of the at least one aircraft and the position and altitude of the second of the at least one aircraft are within a predetermined range of one another.

53. (PREVIOUSLY PRESENTED) The method of claim 34, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises the steps of:

comparing the at least one aircraft position and altitude to an airport noise profile, and

determining that the at least one aircraft should be warned if the position and altitude of the at least one aircraft is approaching or exceeding a boundary of the airport noise profile.

54. (PREVIOUSLY PRESENTED) The method of claim 34, wherein said step of warning the at least one aircraft comprises the step of generating an audio radio message to the at least one aircraft so that a pilot of the at least one aircraft is audibly warned.

55. (PREVIOUSLY PRESENTED) The method of claim 34, wherein said step of warning the at least one aircraft comprises the step of generating a visual message to the at least one aircraft so that a pilot of the at least one aircraft is visually warned.

56. (PREVIOUSLY PRESENTED) The method of claim 55, wherein said step of warning the at least one aircraft comprises the steps of:

transmitting, over a digital data link, digital warning data to the aircraft from the ground, and displaying the digital warning data on an aircraft cockpit display.

57. (PREVIOUSLY PRESENTED) The method of claim 37, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises the steps of:

comparing the at least one aircraft position, altitude and track to a minimum safe altitude profile, and

determining that the at least one aircraft should be warned if the position, altitude, and track of the at least one aircraft indicates that the at least one aircraft is approaching or below that of a minimum safe altitude for the position of the at least one aircraft.

58. (PREVIOUSLY PRESENTED) The method of claim 37, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises the steps of:

comparing the position, altitude, and track of a first of the at least one aircraft with the position, and altitude, and track of a second of at least one aircraft, and

determining that the at least one aircraft should be warned if the position, altitude, and track of the first of the at least one aircraft and the position, altitude, and track of the second of the at least one aircraft are within a predetermined range of one another or on course to come within a predetermined range of one another.

59. (PREVIOUSLY PRESENTED) The method of claim 37, wherein said step of comparing in a ground-based system aircraft position and altitude to at least one predetermined criteria to determine whether the at least aircraft should be warned comprises the steps of:

comparing the at least one aircraft position, altitude, and track to an airport noise profile, and determining that the at least one aircraft should be warned if the position, altitude, and track indicate that the at least one aircraft is approaching or exceeding a boundary of the airport noise profile.

60. (PREVIOUSLY PRESENTED) The method of claim 37, wherein said step of warning the at least one aircraft comprises the step of generating an audio radio message to the at least one aircraft so that a pilot of the at least one aircraft is audibly warned.

61. (PREVIOUSLY PRESENTED) The method of claim 37, wherein said step of warning the at least one aircraft comprises the step of generating a visual message to the at least one aircraft so that a pilot of the at least one aircraft is visually warned.

62. (PREVIOUSLY PRESENTED) The method of claim 61, wherein said step of warning the at least one aircraft comprises the steps of:

transmitting, over a digital data link, digital warning data to the aircraft from the ground, and displaying the digital warning data on an aircraft cockpit display.